Sectionwise Grand Test – Quantitative Aptitude – SWGTQ-171202

HINTS & SOLUTIONS

ANSWER KEY

1. (4)	11. (2)	21. (5)	31. (4)	41. (1)
2. (2)	12. (3)	22. (1)	32. (3)	42. (2)
3. (5)	13. (4)	23. (5)	33. (4)	43. (5)
4. (4)	14. (2)	24. (4)	34. (3)	44. (2)
5. (5)	15. (1)	25. (2)	35. (3)	45. (5)
6. (2)	16. (1)	26. (4)	36. (3)	46. (3)
7. (1)	17. (3)	27. (1)	37. (3)	47. (2)
8. (3)	18. (2)	28. (2)	38. (2)	48. (4)
9. (3)	19. (2)	29. (1)	39. (2)	49. (5)
10. (4)	20. (4)	30. (1)	40. (3)	50. (1)

HINTS & SOLUTIONS

1. (4) Let marked price for article II is 100x
Cost price of item II for seller A
$= \frac{100}{100+s} \times (100x - 16x) = \frac{100}{100+s}(84x)$
Cost price of item II for seller C
$= \frac{100}{100+3s-2}(100x - 32x) = \frac{100}{98+3s}(68x)$
Given
$\frac{\frac{100}{100+s}84x}{\frac{100}{98+3s}68x} = \frac{21}{17}$
$\frac{98+3s}{100+s} \times \frac{21}{17} = \frac{21}{17}$
$98 + 3s = 100 + s$
$2s = 2$
$s = 1$

2. (2) Let marked price for iten II be 100x
Let marked price for iten III be 100y
Let for seller D, Selling price of item II = $82x$
Let for seller D, selling price of item III = $93y$
Given
$82x - 93y = 4810$ ... (i)
According to question
$100x + 100y = 8000$
$x + y = 80$ ... (ii)
From eqn. (i) and (ii)
$y = 10$
$x = 70$
MP of item II = $100x$ = 7000
MP of item III = $100y$ = 1000
Required difference = 7000 – 1000
= 6000 Rs.

3. (5) Let marked price of Item II be 100x
SP of item II by seller A = $100x - 16x = 84x$
Let SP of item II by seller B = y
$\therefore 84x + y = 8800$ ...(i)
And S.P. of item II by seller C = $68x$
Now, $y + 68x = 7200$ ...(ii)
From eqn. (i) and (ii)
$16x = 1600$
$x = 100$
S.P. of item II by seller C = $68x$
= 6800 Rs.

4. (4) Let Cost price of item I by seller E = x
Let selling price of item III by same seller = y
Given, $\frac{x}{y} = \frac{5}{6}$
C.P. of item I by seller E
$= \frac{750}{25} \times 100 = 3000$ Rs.
S. P. of item III by seller E
$= \frac{6x}{5} = \frac{6 \times 3000}{5} = 3600$ Rs.
C.P. of item III by seller E
$= \frac{100}{100+20} \times 3600 = \frac{100}{120} \times 3600 = 3000$ Rs.
Profit on item III by seller E = 3600 – 3000
= 600 Rs.
Total profit by selling item I and III together
= 750 + 600
= 1350 Rs.

5. (5) Here total profit earned by five sellers
$= \frac{13500}{5400 \times 5} \times 100 = 50\%$
Let C.P. of each item = 100
Then MP of item III by each seller = 100 + 100 = 200
SP of item III by seller A = $\frac{68}{100} \times 200 = 136$
SP of item III by seller B = 154
SP of item III by seller C = 152
SP of item III by seller D = 186
Total profit excluding that of seller E
= 36 + 54 + 52 + 86
= 228 Rs.

To make 50% profit, minimum profit of item III by seller E = (250 – 228)
= 22
Required discount $= \frac{200 - (100+22)}{200} \times 100 = 39\%$

6. (2) Time taken in travelling to Bhopal
Half of the distance by car = $\frac{18}{2}$ = 9 hours
One-third of the distance by bus = $\frac{15}{3}$ = 5 hours
Rest of the distance by train = $12 \times (1 - \frac{1}{2} - \frac{1}{3}) = \frac{12}{6}$ = 2 hours
Average Speed = $\frac{Total\ Distance}{Total\ Time\ Taken} = \frac{1080}{(9+5+2)} = \frac{1080}{16}$ = 67.5 km/h

7. (1) Let the estimated speed of car be x km/h
Then, Actual speed of car = 1.25x km/h
Ratio of speed is inversely proportional to ratio of time taken, when distance is same.

$$\frac{Actual\ Speed}{Estimated\ Speed} = \frac{Estimated\ Time\ Taken}{Actual\ Time\ Taken}$$

$$\frac{1.25x}{x} = \frac{5}{Actual\ Time\ Taken}$$

$\Rightarrow$ Actual time taken to reach Delhi = 4 hours

Similarly,

Actual time taken to travel back from Delhi by train= 3 hours 45 minutes

Total time = 4 hours + 4 hours + 3 hours 45 minutes = 11 hours 45 minutes

Hence, person reached his place at = 8 AM + 11 hours 45 minutes = 7:45 PM

8. (3) Fare in terms of Rs/km for journey by bus:

For Lucknow = $\frac{1296}{720}$ = 1.8 Rs/km

Similarly,

For Jaipur = 1.75 Rs/km

For Ahmedabad = 1.95 Rs/km

For Bhopal = 1.7 Rs/km

For Delhi = 2.1 Rs/km

For Chandigarh = 2.05 Rs/km

Hence, journey to Jaipur is the second most economical by bus.

9. (3) Ratio of speed is inversely proportional to ratio of time taken, when distance is same.

Ratio of speeds = $\frac{1}{7} : \frac{1}{8} : \frac{1}{5} = 40 : 35 : 56$

10. (4) Let, the present ages of Raju and his son be x and y respectively.

2n years ago,

$x - 2n = 4(y - 2n)$

$x = 4y - 6n$ .....(i)

n years ago,

$x - n = 3(y - n)$

$\Rightarrow x = 3y - 2n$ .....(ii)

Solving (i) and (ii),

$y = 4n$

And, $x = 4 \times 4n - 6n = 10n$

N years later,

$x + n + y + n = 80$

$\Rightarrow 4n + n + 10n + n = 80$

$\Rightarrow 16n = 80$

$\Rightarrow n = 5$

Difference in their ages = $10n - 4n = 50 - 20 = 30$

11. (2) Let the C do in one day = $4y$ work

Let the D do in one day = $5y$ work

2 day work of C + D = $9y$

In 44 day they will complete $9y \times 22 = 198y$

In another $\frac{1}{2}$ days $2y$ work will be done

C will take = $\frac{200y}{4y}$ days = 50 day

D will take = 40 days.

C and D will complete work together in = $\frac{50 \times 40}{90} = \frac{200}{9}$

According to condition

$$\frac{200}{9x} + \frac{200}{9 \times 2x} = 1$$

$$\frac{400 + 200}{18x} = 1$$

$\Rightarrow x = 33\frac{1}{3}$

12. (3) A – $33\frac{1}{3}$ days

B – $66\frac{2}{3}$ days

(A+B) – $\frac{200}{9}$ days

Required Time – $\frac{200}{9} \times \frac{9}{4} = 50$ days

13. (4) For Bag A

W = O + 5 ...(i)

Let No. of Red Colored balls = x

$\therefore$ Total balls = O + W + x

$\therefore \frac{x}{O + W + x} = \frac{15}{52}$ ... (ii)

and Given —W = $131\frac{1}{4}$% of O

$W = \frac{21}{16}O$

$\frac{W}{O} = \frac{21}{16}$

From eqn. (i)

No. of white colored balls = 21

No. of Orange colored balls = 16

From eqn. (ii)

$\frac{x}{21 + 16 + x} = \frac{15}{52}$

$\frac{x}{37 + x} = \frac{15}{52}$

$52x = 37 \times 15 + 15x$

$37x = 37 \times 15$

$x = 15$

$\therefore$ No. of red colored balls = 15

$\therefore$ for bag A —

Red = 15

White = 21

Orange = 16

Similarly,

For bag B —

Orange = 19

White = 6

Red = 50

For Bag C —

White = 15

Red = 9

Orange =24

After replacement

No. of white balls in Bag C = 15 + x

No. of Red balls in Bag C = $9 - 2 = 7$

No. of Orange balls in Bag C = 24

$\therefore \frac{24}{15 + x + 7 + 24} = \frac{1}{2}$

$48 = 46 + x$

$x = 2$

14. (2) For Bag A

W = O + 5 ...(i)

Let No. of Red Colored balls = x

$\therefore$ Total balls = O + W + x

$\therefore \frac{x}{O + W + x} = \frac{15}{52}$ ... (ii)

and Given —W = $131\frac{1}{4}$% of O

$W = \frac{21}{16}O$

$\frac{W}{O} = \frac{21}{16}$

From eqn. (i)

No. of white colored balls = 21
No. of Orange colored balls = 16
From eqn. (ii)

$$\frac{x}{21+16+x}=\frac{15}{52}$$
$$\frac{x}{37+x}=\frac{15}{52}$$
$$52x = 37\times 15 + 15x$$
$$37x = 37\times 15$$
$$x = 15$$
∴ No. of red colored balls = 15
∴ for bag A —
Red = 15
White = 21
Orange = 16
Similarly,
For bag B —
Orange = 19
White = 6
Red = 50
For Bag C —
White = 15
Red = 9
Orange =24

Required %
$$=\frac{(16+24)-(15-9)}{(16+24)}\times 100$$
$$=\frac{40-6}{40}\times 100 = 85\%$$

15. (1) For Bag A
W = O + 5 ...(i)
Let No. of Red Colored balls = x
∴ Total balls = O + W + x
$$\therefore \frac{x}{O+W+x}=\frac{15}{52}\cdots \text{(ii)}$$
and Given —W = $131\frac{1}{4}$% of O
$$W=\frac{21}{16}O$$
$$\frac{W}{O}=\frac{21}{16}$$
From eqn. (i)
No. of white colored balls = 21
No. of Orange colored balls = 16
From eqn. (ii)

$$\frac{x}{21+16+x}=\frac{15}{52}$$
$$\frac{x}{37+x}=\frac{15}{52}$$
$$52x = 37\times 15 + 15x$$
$$37x = 37\times 15$$
$$x = 15$$
∴ No. of red colored balls = 15
∴ for bag A —
Red = 15
White = 21
Orange = 16
Similarly,
For bag B —
Orange = 19
White = 6
Red = 50
For Bag C —
White = 15
Red = 9
Orange =24

$$\text{Required Probability}=\frac{16}{52}\times\frac{19}{75}=\frac{76}{975}$$

16. (1) Income of company Y
$$=\frac{520000}{65}\times 165$$
$$=1320000$$

17. (3) Amount invested by company X in 2014
$$\frac{2}{3}\times 30{,}00{,}000 = 20\ lakh$$
Amount invested by company Y in 2014
$$=\frac{1}{3}\times 30{,}00{,}000 = 10\text{lakh}$$
Profit earned by company X = $\frac{75}{100}\times 20{,}00{,}000$
= 15 lakh
Profit earned by company Y = $\frac{80}{100}\times 10{,}00{,}000$
= 8 lakh
Total profit = 23 lakh

18. (2) Investment of company X in 2013
$$=\frac{48{,}00{,}000}{1.60}=30\text{lakh}$$
Profit earned in 2013 = 48 – 30 = 18 lakh
Profit earned in 2012 = $\frac{45}{100}\times 30{,}00{,}000$
= 13.50 lakh
Difference = 18 – 13.5 = 4.5 lak

19. (2) Income of X in 2010 = 1.75x
Income of Y in 2010 = 1.55x
∴ ratio= $\frac{170}{155}=34:31$

20. (4) Income of company X in 2012
$$=\frac{145}{100}\times 8{,}00{,}000$$
$$=1{,}160{,}000$$
Amount invested in 2013 by company X
$$=\frac{1160000}{160}\times 100 = 725000$$

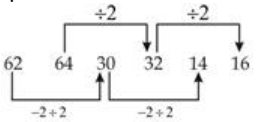
21. (5) A) M + T + W = 38 × 3 = 114
B) T +W + Th = 43 × 3 = 129
C) T = Th = 45
All the three together are sufficient

22. (1) Let the length of rectangle is ℓ and width is w
Length becomes = 0.85ℓ
Width becomes = $1.2\ b$
A) b = 16 cm
B) ℓ = 25 cm
C) $b\times\ell$ = 400 cm
Area= $0.85l\times 1.2b = 1.02lb$
Change in Area = $1.02lb - lb = .02lb$
Put value of lb $from$ C
The answer can be calculated using A and B together or C only.

23. (5) We cannot find because there is no information regarding strength of non-officer employees.

24. (4) Let the marked price is M and cost price is C.
A) 0.85 M = 1020
M = 1200
B) M = $\frac{25}{17}$C
C) 0.9 M = $\frac{22.5}{17}$C
A and either B or C.

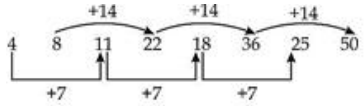
25. (2) We can get ratio of investment from either statement B alone or C alone so profit of B can be determined from option b

26. (4) 

27. (1) 5 × 2- 1 = 9
9 × 2 + 3 = 21
21 × 2 – 5 = 37
37 × 2 + 7 = 81

28. (2) $(1)^3+1=2$
$(2)^3+2=10$
$(3)^3+3=30$
$(4)^3+4=68$
$(5)^3+5=130$
$(6)^3+6=222$

29. (1)



30. (1) $4 \times 0.5 + 0.5 = 2.5$
$2.5 \times 1 + 1 = 3.5$
$3.5 \times 1.5 + 1.5 = 6.75$
$6.75 \times 2 + 2 = 15.50$
$15.50 \times 2.5 + 2.5 = 41.25$

31. (4) Temperature on the fourth day
$= 40.2 \times 4 + 41.3 \times 4 - 40.6 \times 7$
$= 160.8 + 165.2 - 284.2 = 41.8°C$

32. (3) Suppose there are only men, then the no. of legs $= 60 \times 2 = 120$
Now since there are $48 = (168 - 120)$
legs extra, it means there are 24
$= \left(\frac{48}{2}\right)$ sheep, since a sheep has 2 extra legs than a man has.

33. (4) Let the original fraction be x/y.
Then, $\frac{115\% \text{ of } x}{92\% \text{ Of } y} = \frac{15}{16} \Rightarrow \frac{115x}{92y} = \frac{15}{16}$
$\Rightarrow \frac{x}{y} = \left(\frac{15}{16} \times \frac{92}{115}\right) = \frac{3}{4}$

34. (3) Let cost price = x
Then we have, $x\left(\frac{95}{100}\right)\left(\frac{110}{100}\right) = x\left(\frac{105}{100}\right) - 1$
$or, x = \frac{100 \times 100}{105 \times 100 - 95 \times 110} = 200$
∴ Cost price = Rs 200

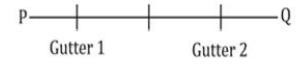
35. (3) For 3 years
$\text{Diff.} = \frac{\text{Sum} \times (\text{rate})^2 (300 + \text{rate})}{(100)^3}$
$= \frac{2000 \times 10 \times 10 \times 310}{100 \times 100 \times 100} = \text{Rs } 62$

36. (3) Required profit percentage
$= \frac{125 - 120}{120} \times 100$
$= 4\frac{1}{6}\%$

37. (3) New cost price of the item
$= \frac{125}{(\frac{3}{22} + 1)} \times 100 = 110$
Reduction in expenditure on raw materials required = Rs. 10
∴ Percentage reduction required $= \frac{10}{46} \times 100$
$= 21\frac{17}{23}\%$

38. (2) Changed fixed price = 1.25 × 20 = Rs. 25
∴ Total cost of the item = Rs. 125
= Previous selling price
∴ Required percentage increase = 20%

39. (2)

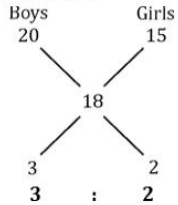


Distance from P to gutter 1
$= 60 \times \frac{10}{60} = 10$ km.
This is $\frac{5}{6}$ (Distance between gutter 2 and Q)
∴ Distance between Q and Gutter 2 = 12 km.
Distance between Gutter 1 and 2 = 72 – 12 – 10 = 50 km.
Total time of travel of the ambulance at twice the speed
$= \frac{50 \times 2 + 10}{120} = \frac{11}{12}\ hours = 55\ minutes.$
Total time of travel of the ambulance = (55 + 10) = 65 minutes.
Total time taken = 65 + 2 = 67.

40. (3) At 10 : 15 a.m.
In one hour 15 min i.e. upto 10:15 Am
total distance travelled by both is $40 + 10\ km$
They will meet after $= \frac{120 - 50}{80}$
$= \frac{70}{80} = \frac{7}{8} hrs = \frac{7}{8} \times 60$ minutes
$\frac{105}{2} = 52$ minutes 30 seconds
They will meet at 10 : 15 a.m. + 52 minutes
30 sec i.e. 11 : 07 : 30 a.m.

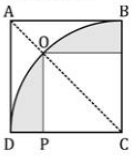
41. (1) Quantity I:-
$\frac{95}{100}\text{MP} = \frac{133}{100}\text{CP}$
$\Rightarrow$ MP = 1.4 CP
Percentage mark-up = 40%
Quantity II:-
Total no. of people under 25 years of age $= \frac{40}{100} \times 60 = 24$
No. of singers under 25 years of age $= \frac{20}{100} \times 20 = 4$
No. of dancers under 25 years of age $= 24 - 4 = 20$
Percentage of dancers under 25 years of age $= \frac{(40-20)}{60} \times 100 = 33\frac{1}{3}\%$
Quantity II < Quantity I

42. (2) Quantity I:-
Fifth number = 5 × 61 – 2 × 69 – 2 × 69
= 305 – 276
= 29
Quantity II:-



3 : 2
No. of boys $= \frac{3}{2} \times 20 = 30$
Quantity II > Quantity I

43. (5)



$\Delta OPC \sim \Delta ADC$
hence, $\frac{OC}{AC} = \frac{PC}{DC}$
or, $\frac{7\sqrt{2}}{14} = \frac{PC}{7\sqrt{2}}$
or, PC= 7 and OP = 7
Area of shaded region
$= \frac{1}{4} \times \frac{22}{7} \times 7\sqrt{2} \times 7\sqrt{2} - 7 \times 7 = 28\ cm^2$
So, quantity I=quantity2

44. (2) Since $x > 0$ and $y < 0$,
Quantity 1 will always be negative
And quantity 2 will always be positive
Hence, quantity 1 < quantity 2

45. (5) Let the speed of boat in still water be x kmph and that of stream be r kmph,

Then $\frac{x-r}{r} = \frac{5}{1}$

$\Rightarrow \frac{x}{r} = \frac{6}{1}$

$5 \times 7x - 3 \times 6x = 68$

$\Rightarrow x = 4$

Quantity 1: upstream speed of boat $= 5x = 20$ km/hr

Quantity 2: speed of bus $= \frac{60}{3} = 20$ km/hr

46. (3) On Tuesday

$\text{Gaurav} = \frac{25 \times 100}{50} = 50$ minutes

$\text{Abhishek} = \frac{20 \times 100}{80} = 25$ minutes

$\text{Neeraj} = \frac{10 \times 100}{100} = 10$ minutes

∴ Gaurav 50 ←(+1)
Abhishek 25 ←(+2) 50
Neeraj 10 ←(+5)

Clearly on Tuesday, the efficiency of Neeraj is maximum. So he should start the job so that the job is completed in the least possible time.

47. (2) On Tuesday

Gaurav = 50 minutes

$\text{Arunoday} = \frac{150 \times 100}{30} = 500$ minutes

Abhishek = 25 minutes

(Gaurav + Arunoday)'s 5 minutes work

$= \frac{5}{50} + \frac{5}{500} = \frac{1}{10} + \frac{1}{100} = \frac{11}{100}$

$\text{Remaining work} = 1 - \frac{11}{100} = \frac{89}{100}$

$\text{Required time} = \frac{\frac{89}{100}}{\frac{1}{500} + \frac{1}{25}} = 21\frac{4}{21}$ minutes

48. (4) On Tuesday —

Abhishek = 25 min.

$\text{Shailesh} = \frac{50 \times 100}{40} = 125$ min.

Neeraj = 10 min.

Abhishek 25 ←(+10)
Shailesh 125 ←(+2) 250
Neeraj 10 ←(+25)

(Abhishek + Shailesh + Neeraj)'s 1 minute work

= 10 + 2 + 25 = 37 units

Shailesh will work on this job for 7 minutes.

∴ Share of Shailesh $= \frac{7 \times 2}{250} \times 875 = 49$ Rs.

49. (5) On Tuesday —

Aman = 125 × 2 = 250 min.

Neeraj = 10 min.

Abhishek = 25 min.

$\text{Aman's 50 min. work} = \frac{50}{250} = \frac{1}{5}$

$\text{Remaining work} = 1 - \frac{1}{5} = \frac{4}{5}$

$\text{Required time} = \frac{\frac{4}{5}}{\frac{1}{10} + \frac{1}{25}} = 5\frac{5}{7}$ minutes

50. (1) Let Arunoday worked for x minutes

$\therefore \frac{2}{20} + \frac{5}{25} + \frac{5}{35} + \frac{5}{26} + \frac{x}{250} = 1$

$\frac{x}{250} = 1 - \frac{578}{910}$

$x \approx 91$ minutes

∴ Required time = 91 – 5

= 86 minutes